Confidential Claim Retracted

Authorized by: SC

Date: 6/26/13

ENVIRONMENTAL MONITORING
(As per USGS Questionnaire of May 2, 1978)

AIR

An air monitoring program will be established at the Anaconda Jackpile mine which will include the following:

1. Radon gas measurements, averaged over a 48-hour period, will be made each month at the following locations:

   (a) on a reclaimed waste pile east of the old shop;

   (b) near the north perimeter at Jackpile Well #4;

   (c) at the west gate near the town of Paguate; and

   (d) near an active mine vent.

2. Monthly 48-hour air samples will be taken at each of the above locations. They will be analyzed for total particulate, total uranium, thorium 230, radium 226 and lead 210.

3. The expanded monitoring program will be initiated as soon as electricity is available at the new locations and the new equipment arrives.

4. Data will be submitted quarterly and in the same units as the applicable regulations.

5. At the end of one year an evaluation of the data will be submitted. If the data so warrants, a request for modification of the program will be made.

WATER

1. Surface Water Monitoring Locations:

   A surface water monitoring program will be established to include the following locations:

   (a) on the Paguate upstream from the mining area;

   (b) on the Moquino upstream from the mining area;

   (c) on the Paguate just above the confluence with the Moquino;

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(d) on the Moquino just above the confluence with the Paguate;

(e) just below the mining area;

(f) at the mouth of Oak Canyon Wash; and

(g) at the Paguate Reservoir.

2. Ground Water Monitoring Locations:

A ground water monitoring program will be established to include the following locations:

(a) Old Shop Well, New Shop Well and Jackpile Well #4;

(b) Monitor wells presently being drilled down-gradient from the waste water holding ponds.

3. Monitoring Parameters and Frequencies:

(a) All locations will be monitored monthly for uranium natural and radium 226.

(b) All surface and all ground water locations will initially be monitored for:

pH	Zn	Cu
specific conductance	Mo	
Ca	V	
Mg	Cd	
Na	Pb	
K	Hg	
HCO_3	Ni	
SO_2	Se	
SO_4	NO_3	
F	As	
Cl	Cr	
Fe	Ba	
Mn	TDS	

If any of the chemical constituents are found to be 75% or more of the allowable standard, each particular item exceeding the limit will be analyzed quarterly. All samples will be analyzed annually for the above chemicals.

4. The data will be submitted quarterly in the units of the applicable regulations. At the end of one year an evaluation of the data will be submitted. If the data so warrants, a request for modification of the

program will be made.

ADDENDUMS TO THE MINE PLAN

1. Water

   (a) The response to this section is presently being prepared by the Dames and Moore Consulting Firm and will follow under separate cover.

   (b) The response to this section is presently being prepared by the Dames and Moore Consulting Firm and will follow under separate cover.

   (c) Most of the ephemeral or perennial drainages flow into the Rio Moquino or Rio Paguate. Water samples taken downstream of the Jackpile-Paguate Mine show radionuclide values below MPC. Such values indicate the possibility of limited transport of radioactive materials from waste piles. Certain water drainages may pass along stockpiles, but the piles will be removed at or before mine closedown. As for water flow from atop reclaimed waste piles, an erosion control system is presently being used by Anaconda. The program consists of water entrapment berms on declining slope areas on dump surfaces and similar berms around the outer edge of each dump level.

2. Vegetation

   Anaconda is presently instituting a minesite reclamation sampling program. Included in this program under Phase III is a soil and vegetation sampling project. Vegetation samples from completed reclamation sites will be analyzed for the radionuclides, total uranium, thorium 230, radium 226 and lead 210. Selenium is among the chemical elements to be assayed on the vegetation samples. Such a program will give an actual account of uptake on all planted species that appear on reclaimed sites.

3. Stabilization of Waste Piles

   Applicable stabilization methods of the Jackpile-Paguate Mine have been addressed in Appendix D to Anaconda's Mining and Reclamation Plan. The reader is referred to these for background material in response to question three. In addition, the following material is presented in response to specific items in question three.

Reduction of slope angles is identified as one alternative recommended for consideration. This is a valid method worthy of consideration for meeting reclamation goals at the Jackpile Mine.

However, the whole concept of reducing slope angles introduces consideration of a number of trade-offs, not the least of which are the following:

- Reduction of easily accessible level surface acreage

- Accompanying decline in forage yields (level surfaces would more likely support higher forage yields, other factors being constant)

- Increase in erosion-prone slope surfaces

- Loss of valuable seed sources from desirable plant species which establish on existing slopes (steep slope surfaces would be ordinarily immune from excessive grazing pressures due to their inaccessibility relative to low-lying level areas)

Landscape surrounding the Jackpile Mine contain steep, sometimes vertical and undercut slopes that support little vegetation. Many slopes at the Jackpile Mine are more gentle than surrounding terrain. Physical and vegetative methods to stabilize these slopes are currently being implemented or being considered for pilot programs at the mine.

Preliminary estimates (see attached) indicate slope reduction is very costly to implement. Furthermore, alternative procedures which can prove effective for slope stabilization purposes at the mine compare favorably to cost estimates for reducing slope angles (see Cost Summary Table In Appendix D of Reclamation Plan).

Deposition of large aggregates on the Jackpile Mine slopes has been suggested as one stabilization method in the above-referenced letter. This is one of the more effective procedures for significantly inhibiting movement over long time periods. Aggregate deposition has been undertaken on several dumps (see photographs Appendix B to Mining and Reclamation Plan).

Consideration of additional cover for vegetation stabilization has been identified as one alternative in the above-referenced letter. Studies to date that have been carried out on behalf of Anaconda Company, however, indicate key phytosociological parameters on eight to twelve inches of suitable overburden approaches that of surrounding rangeland. These plant community charactersitics are being checked for long term changes. Data will be reported as it becomes available.

Sampling for trace metal concentrations in vegetation is being contemplated for any dumps which show relatively high radioactivity. Data from Anaconda's radiological monitoring program will be reported as it becomes available.

Biodegradeable matting has been identified in the above-referenced letter as one alternative to slope stabilization. Biodegradeable matting or similar materials can be an effective aid to vegetation establishment on steep slopes. Their utility in the semi-arid conditions in the Jackpile Mine is questionable however, particularly in light of other less costly but effective stabilization procedures. It is recognized, however, that in some cases, e.g. steep waste dump slopes adjacent to permanent drainages, biodegradeable matting may be one of the more useful and cost effective approaches to reduce material transport from waste dumps resulting from infrequent heavy rainfall or snowmelt in the area. Anaconda is investigating several matting or mat-like materials for use at the mine.

Benching has been identified in the above-referenced letter as one alternative to steep slope stabilization. This is a valid method of inhibiting material transport on steep slopes and erosion prone areas. Some slopes may be considered for benching or trenching in conjunction with physical, vegetable or a combination of slope stabilization procedures, should pilot programs be ineffective in controlling erosion.

4. Waste Pile Radiological Report

(a) Information concerning radon gas appears to be the main factor of concern under Section 4 of the U.S.G.S. requests. Anaconda's Jackpile-Paguate minesite reclamation sampling program includes monitoring radon. Phase III involves measurement of randon (Rn^{222}) exhalation fluxes from radium on reclaimed dumps. Since Rn^{222} is the factor of interest and our sampling design directly includes radon measurements on previously reclaimed dumps and also future sites, it may not be necessary to monitor the parameters mentioned to determine a radon value on dumps that have been reclaimed.

NOTE: The Rn^{222} flux study will begin following the gamma survey and evaluation as per the sampling design.

(b)

Dump	Type of Cover	Amount
North Dump	Tres Hermanos Sandstone	Crushed existing rock on surface 18'24" deep
O, P_d, P_1, P_2	Tres Hermanos Sandstone	Existing material on dump
F,G	Mixture of Tres Hermanas Sandstone and some shales	18'24"
C,D,E	Tres Hermanas Sandstone	Existing material on dump
J,V	Tres Hermanas Sandstone	18'24"
T	Tres Hermanas Sandstone	24"

(c) At present, soil samples taken from dumps to be reclaimed are analyzed for a number of chemical elements in which selenium is included. Again, in our minesite reclamation sampling program, soil samples from dumps will be run for total uranium, thorium 230, radium 226 and lead 210.

(d) An estimation of cover required could possibly be accomplished from data obtained from previously reclaimed dumps. The results from the radionuclide analysis on dump soils may also aid in predicting radon gas levels and subsequently amount to cover material. There are no present regulation setting limits on radon exhalation fluxes from reclaimed uranium mine wastes, however, the radon exhalation on reclaimed uranium mill tailings should be kept below twice the background value (U.S.N.R.C.

Scarano, et al, 1977). Flux data obtained by the United States Environmental Protection Agency reveals values on old and new dump sites at less than twice background, and many values are equal to background.

5. Reclamation Report

Due to the working schedule involved in our reclamation project, it may be more feasible to submit the annual report in November or December. The year's project work for that particular growing season will be completed at the summer's end and more easily reported at its completion. Also, it is unfair to evaluate the success of the year's reclamation project over one growing season and for this reason reporting of stabilization (germination and survival rates) can be made in subsequent yearly reports.

EXHIBIT I

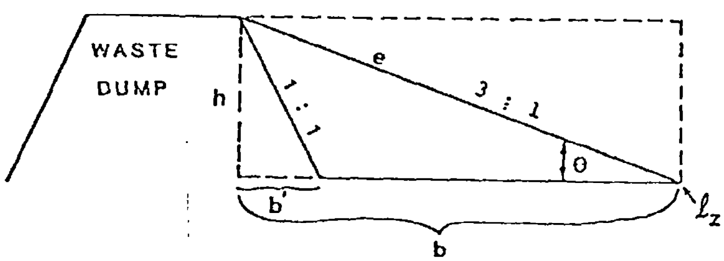
PER ACRE COSTS OF STABILIZATION PROCEDURES[1]

A. Costs for regrading slopes or waste dumps from 1:1 to 1:3: (Method 1)

Assumptions:

1. Dumps are 30 feet high (h)*
2. 1 yd^3 of overburden weighs ≈1.5 tons (t)**
3. A D-9 cat can move 357 tons of overburden/hr. (m) at a cost of $60/hr. (d)***
4. 1 yd^3 = 27 $ft.^3$ (q)
5. Slope conversions based on a plane surface
6. ℓ_z is an arbitrary distance at waste dump base (10,000 feet)
7. 1 acre = 43560 $ft.^2$ (f)

Computations:



1. Cubic yards of material to be moved for regrading slopes (Y):

$$Y = \frac{hb/2 - hb'/2\,(\ell_z)}{q} = \frac{\frac{(30)(90)}{2} - \frac{(30)(30)}{2}(10{,}000)}{27} = \underline{\underline{330{,}000}}$$

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*Estimated during field observations and from information supplied by Anaconda.
**Ref. 19
***Supplied by Anaconda
[1] These are estimated costs and are intended only to present differences in magnitude for various alternatives. Futhermore, they are estimated on present dollar values and may need adjustment for future inflation or recession.

2. Tons of material to be moved:

$$T = (t)(Y) = (1.5)(330{,}000) = \qquad \underline{\underline{495{,}000}}$$

3. Acres on 3:1 slope (A):

$$A = \frac{e\ell_z}{f} = \frac{(94.3)(10{,}000)}{43560} = \qquad \underline{\underline{21.8}}$$

4. Cost per acre 3:1 of regrading slopes (C):

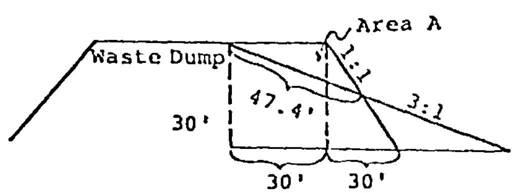
$$C = \frac{T/m(d)}{A} = \frac{\frac{495{,}000}{357}(60)}{21.8} = \qquad \underline{\underline{\$3{,}816}}$$

A_2. Costs for regrading slopes or waste dumps from 1:1 to 3:1 (Method 2)

<u>Assumptions:</u>

Same as Method 1

<u>Computations:</u>



1. Cubic yards of material to be moved for regrading slopes (Y):

$$Y = (1/2)(30')(47.4)(\sin\Theta)(\ell_z) =$$

$$\frac{1/2(30')(47.4')(.31620)(10{,}000)}{27} = \qquad \underline{\underline{83{,}266}}$$

2. Tons of material to be moved (T):

$$T = (t)(Y) = (1.5)(83{,}266) = \qquad \underline{\underline{124{,}899}}$$

3. Acres on 3:1 slope (A):

$A = 21.8$*

4. Cost per $\text{acre}_{3:1}$ of regrading slopes (C):

$$C = \frac{T/m\ (d)}{A} = \frac{\frac{124899}{357}(60)}{21.8} = \qquad \underline{\underline{\$963}}$$

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* From Method 1